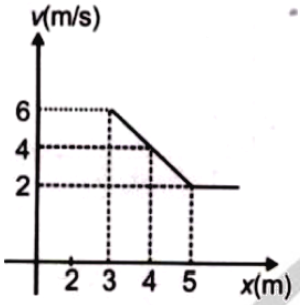
ARJUNA 2.0 (JEE)

Motion in a Straight Line

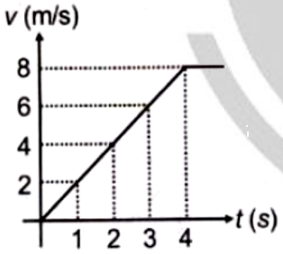
DPP-12

1. The velocity (v) of a particle varies with position (x) as shown in the graph. Its acceleration when x = 4 m will be



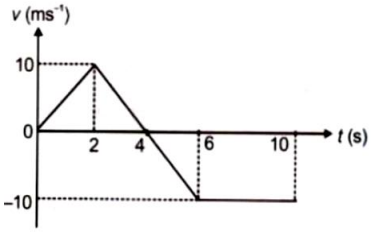
(A) -8 m/s^2 (B) 8 m/s^2
(C) 2 m/s^2 (D) -2 m/s^2

2. From the velocity-time graph of a particle moving in a straight line. The ratio of average velocity for interval 3 s and instantaneous velocity at 3 s.



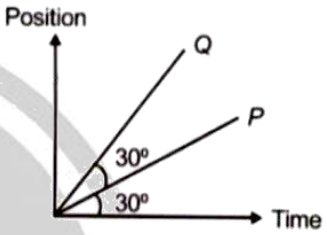
(A) 1 : 1 (B) 1 : 2
(C) 7 : 3 (D) 3 : 2

3. The velocity (v) versus time (t) graph of a particle moving along a straight line is as shown in the given figure. During time interval t = 0 to t = 6 s, the magnitude of displacement and the distance travelled are in the ratio of



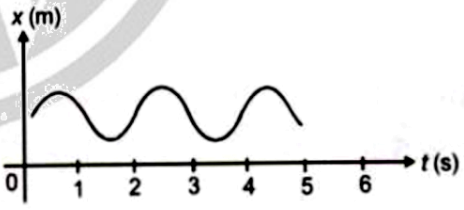
(A) 1 : 1 (B) 1 : 3
(C) 2 : 3 (D) 3 : 1

4. The position-time graph of two particles P and Q are as shown in figure. The ratio of their velocities $\frac{V_P}{V_Q}$ is



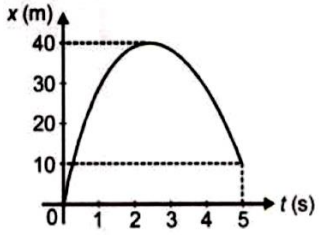
(A) 1 : 3 (B) $\sqrt{3}$: 1
(C) 3 : 1 (D) 1 : $\sqrt{3}$

5. The figure shows position (x) versus time (t) graph of a particle moving along x-axis. During time interval t = 0 to t = 4s, how many times the particle comes to rest ?



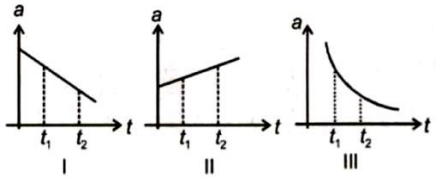
(A) 4 (B) 2
(C) 3 (D) 5

6. Displacement-time (x-t) graph of a particle moving along a straight line path is shown in figure. Average speed of particle in the time interval 0 to 5 second is



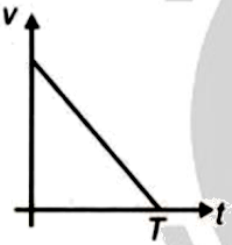
(A) 2 m/s (B) 12 m/s
(C) 10 m/s (D) 14 m/s

7. A particle is moving along positive x-axis with some initial velocity. The acceleration time graphs are shown. In which case velocity of particle will increased for entire time between t_1 to t_2 ?



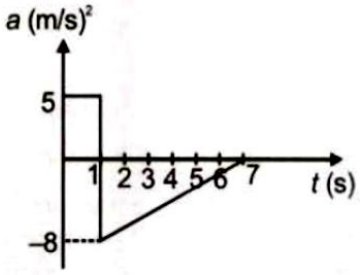
(A) Only in II (B) In I and III
(C) In I and II (D) In I, II and III

8. The velocity versus time graph of a body is shown in figure. If the slope of line is K then distance travelled by the body in time T is



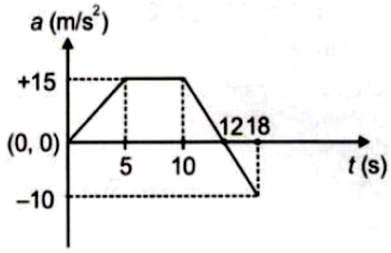
(A) $\frac{K^2T}{2}$ (B) $\frac{KT^2}{2}$
(C) $\frac{K}{2T}$ (D) $\frac{T}{2K}$

9. A particle moves with an initial velocity v_0 = 5m/s in a straight line. If its acceleration a varies with time t as shown in a-t graph, then velocity of the particle at t = 7s is



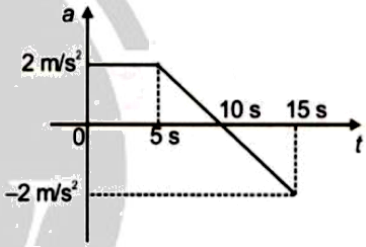
(A) 10 m/s (B) –10 m/s
(C) –14 m/s (D) 24 m/s

10. A particle starts from rest and is acted upon by a variable acceleration as shown. Velocity of the particle is maximum at time t is equal to



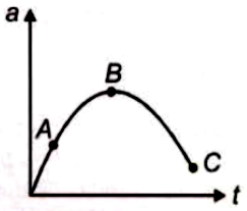
(A) 5 s (B) 10 s
(C) 12 s (D) 18 s

11. Acceleration (a) versus time (t) graph of a particle moving along x-axis is as shown in the figure. Change in velocity of the body in the interval 0 to 15 s is



(A) 20 m/s (B) 15 m/s
(C) 5 m/s (D) 10 m/s

12. Acceleration (a) versus time (t) graph of a particle started from rest is as shown in figure



Which point velocity of the particle is maximum ?

(A) A (B) B
(C) C (D) All of these

ANSWERS KEY

1. (A)
2. (B)
3. (B)
4. (A)
5. (A)
6. (D)
7. (D)
8. (B)
9. (C)
10. (C)
11. (D)
12. (C)

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